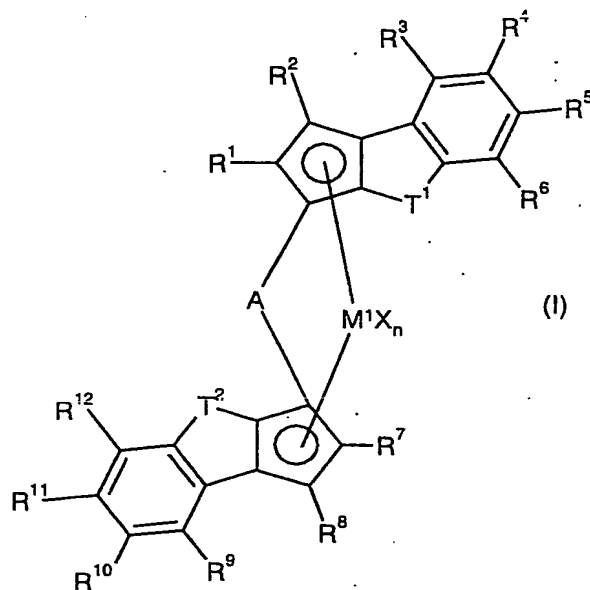


We claim

1. An organometallic transition metal compound of the formula (I)



where

M^1 is a metal of group 3, 4, 5 or 6 of the Periodic Table of the Elements or the lanthanides,

X are identical or different and are each an organic or inorganic radical, where two radicals X can also be joined to one another,

n is a natural number from 1 to 4,

T^1, T^2 are identical or different and are each a divalent group selected from the group consisting of -O-, -S-, -Se-, -Te-, -N(R^{13})-, -P(R^{13})-, -As(R^{13})-, -Sb(R^{13})-, -Si(R^{13})₂-, -C($R^{13}R^{14}$)-C($R^{13}R^{15}$)- and -C(R^{14})=C(R^{15})-, where R^{13} , R^{14} and R^{15} are identical or different and are each hydrogen or an organic radical having from 1 to 40 carbon atoms,

R^1, R^7 are identical or different and are each hydrogen or an organic radical having from 1 to 40 carbon atoms,

R^2, R^8 are identical or different and are each hydrogen or an organic radical having from 1 to 40 carbon atoms,

- R^3, R^9 are identical or different and are each halogen or an organic radical having from 1 to 40 carbon atoms, where R^3 is not methyl when T^1 is $-C(H)=C(H)-$,
- 5 $R^4, R^5, R^6, R^{10}, R^{11}$ and R^{12} are identical or different and are each hydrogen, halogen or an organic radical having from 1 to 40 carbon atoms, or two adjacent radicals $R^4, R^5, R^6, R^{10}, R^{11}$ and R^{12} together with the atoms connecting them form a monocyclic or polycyclic, substituted or unsubstituted ring system which has from 1 to 40 carbon atoms and may also contain heteroatoms selected from
- 10 the group consisting of the elements O, S, Se, Te, N, P, As, Sb and Si,
- or,
- 15 if T^1 or T^2 is $-O-$, $-S-$, $-Se-$ or $-Te-$, the radical R^3 together with R^4 and/or the radical R^9 together with R^{10} forms a monocyclic or polycyclic, substituted or unsubstituted ring system which has from 1 to 40 carbon atoms and may also contain heteroatoms selected from the group consisting of the elements O, S, Se, Te, N, P, As, Sb and Si,
- 20 and
- A is a bridge consisting of a divalent atom or a divalent group.
2. An organometallic transition metal compound of the formula (I) as claimed in claim 1,
- 25 wherein
- M^1 is an element of group 4 of the Periodic Table of the Elements,
- 30 n is 2,
- T^1, T^2 are identical and are each $-O-$, $-S-$, $-Se-$ or $-Te-$,
- R^1, R^7 are identical and are each a C_1 - C_{10} -alkyl radical,
- 35 R^2, R^8 are identical and are each hydrogen,
- R^3, R^9 are identical or different and are each a substituted or unsubstituted C_6 - C_{40} -aryl radical or C_2 - C_{40} -heteroaromatic radical containing at least one
- 40 heteroatom selected from the group consisting of O, N, S and P,

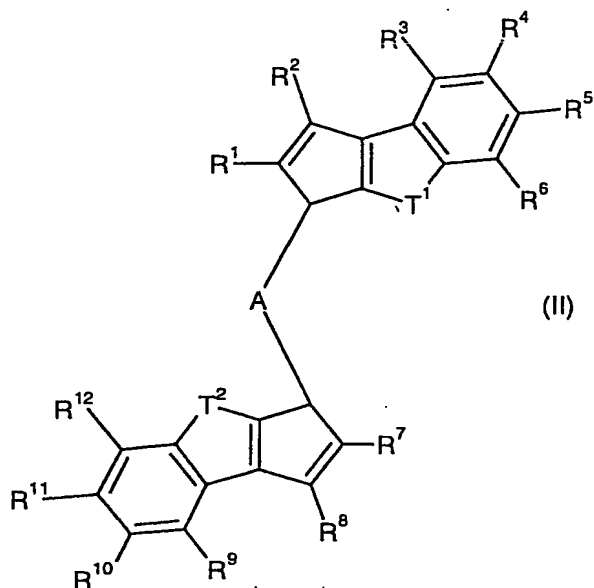
R^4, R^5, R^{10} and R^{11} are identical and are each hydrogen,

R^6, R^{12} are identical and are each hydrogen or an organic radical having from 1 to 20 carbon atoms,

A is a substituted silylene group or a substituted or unsubstituted ethylene group,
and

the other variables are as defined in claim 1.

3. A biscyclopentadienyl ligand system of the formula (II)



or one of its double bond isomers,

where the variables $R^1, R^2, R^3, R^4, R^5, R^6, R^7, R^8, R^9, R^{10}, R^{11}, R^{12}, T^1, T^2$ and A are as defined in formula (I).

4. A biscyclopentadienyl ligand system of the formula (II) as claimed in claim 3,

wherein

T^1, T^2 are identical and are each -O-, -S-, -Se- or -Te-,

R^1, R^7 are identical and are each a C_1 - C_{10} -alkyl radical,

R^2 , R^8 are identical and are each hydrogen,

R^3 , R^9 are identical or different and are each a substituted or unsubstituted
C₆-C₄₀-aryl radical or C₂-C₄₀-heteroaromatic radical containing at least one
heteroatom selected from the group consisting of O, N, S and P,

R^4 , R^5 , R^{10} and R^{11} are identical and are each hydrogen,

R^6 , R^{12} are identical and are each hydrogen or an organic radical having from 1 to
20 carbon atoms,

and

A is a substituted silylene group or a substituted or unsubstituted ethylene group.

5. A catalyst system for the polymerization of olefins comprising at least one organometallic transition metal compound as claimed in claim 1 or 2 and at least one cocatalyst which is able to convert the organometallic transition metal compound into a species which displays polymerization activity toward at least one olefin.
6. A catalyst system as claimed in claim 5 which further comprises a support.
7. A process for preparing polyolefins by polymerization or copolymerization of at least one olefin in the presence of a catalyst system as claimed in claim 5 or 6.
8. The use of a biscyclopentadienyl ligand system as claimed in claim 3 or 4 for preparing an organometallic transition metal compound.
9. A process for preparing an organometallic transition metal compound, which comprises reacting a biscyclopentadienyl ligand system as claimed in claim 3 or 4 or a bisanion prepared therefrom with a transition metal compound.
10. A polyolefin obtainable by the process as claimed in claim 7.